GATES LEARJET CORPORATION

maintenance manual

CHAPTER

37

VACUUM

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The portion of the text affected by the current revision is indicated by a vertical line in the outer margin of the page.

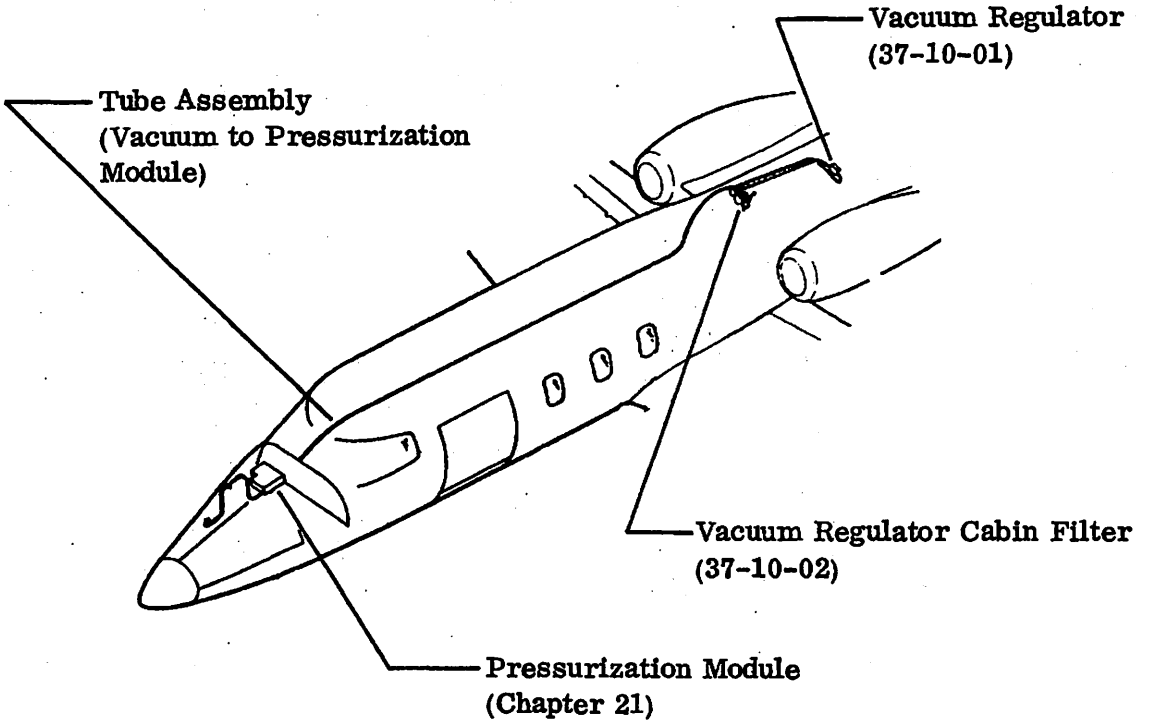
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DISTRIBUTION - DESCRIPTION AND OPERATION

1. Description (See figure 1)
 A. A vacuum regulator, installed in the tailcone equipment section, is utilized to provide a regulated vacuum for pressurization control system operation.
 B. The vacuum regulator filter must be removed and cleaned or replaced in accordance with the time interval specified in Chapter 5.

 NOTE: On Aircraft 25-061, 25-070 thru 25-196, 25-198 thru 25-203 not modified per SSK 937 (Installation of Cabin Pressurization Vacuum Regulator), the filters and jet pump are cleanable.
 On Aircraft 25-197, 25-204 and Subsequent and earlier aircraft modified per SSK 937 (Installation of Cabin Pressurization Vacuum Regulator), the vacuum regulator cabin filter must be cleaned or replaced.

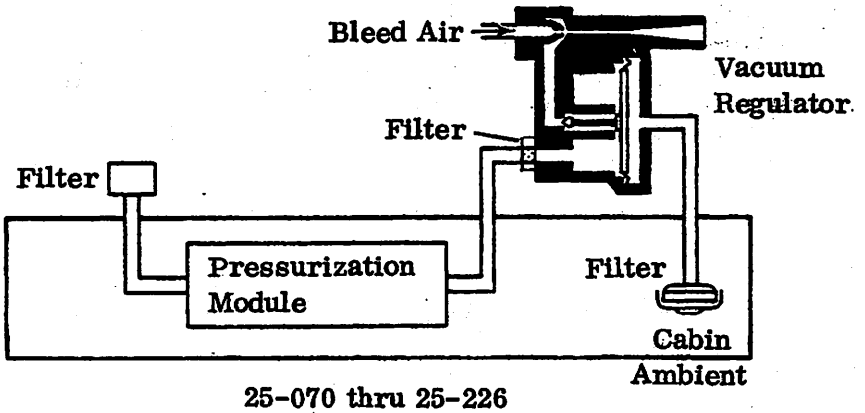
2. Operation (See figure 2)
 A. When bleed air pressure is applied to the vacuum regulator, the regulator creates a regulated vacuum of 4.0 (±0.75) inches of Hg below the existing cabin pressure. The regulated vacuum is sensed by the pressurization module via a sense line. For further information or pressurization control system operation, refer to Chapter 21.



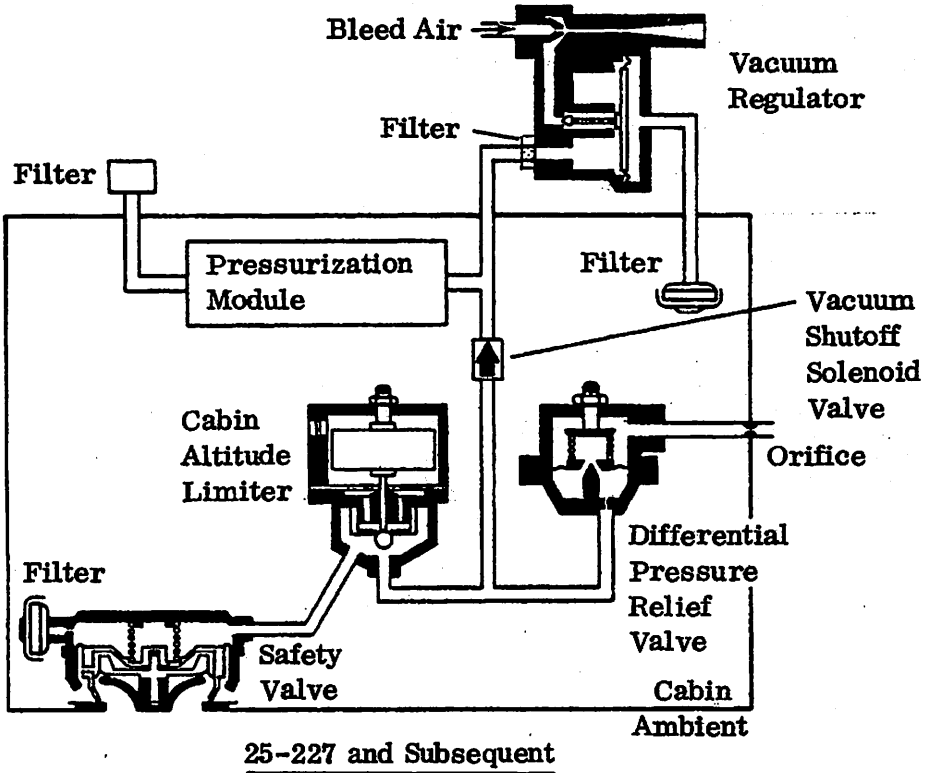
Vacuum System Components Locator
Figure 1

B. Component Operation (See figure 3)

(1) On Aircraft 25-070 thru 25-196, 25-198 thru 25-203 not modified per SSK 937 (Installation of Cabin Pressurization Vacuum Regulator Assembly), the jet pump utilizes the venturi principle with two spring-loaded ball-type relief valves. One of the spring-loaded relief valves relieves vacuum above 4.0 (±0.75) inches Hg (approximately 2 psi) differential while the remaining relief valve relieves any pressure injected into the vacuum line thru any system component malfunction. Filters, installed in the cabin pressure sense port and the vacuum port, are easily removed for cleaning.



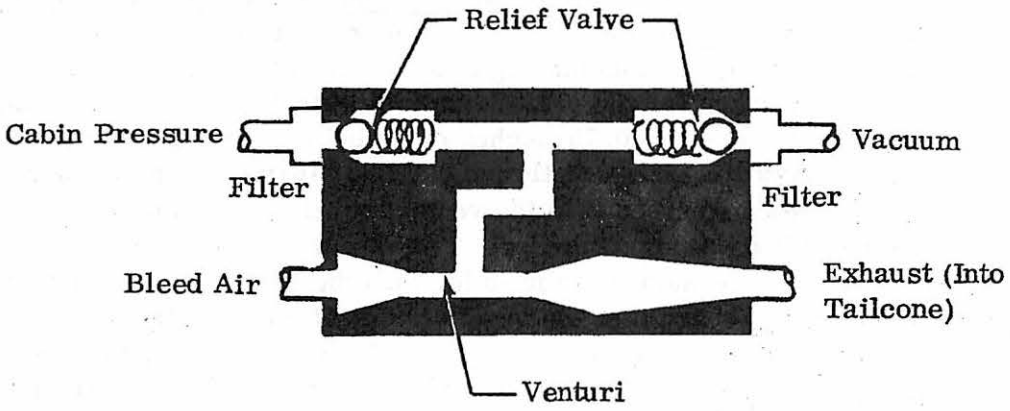
25-070 thru 25-226



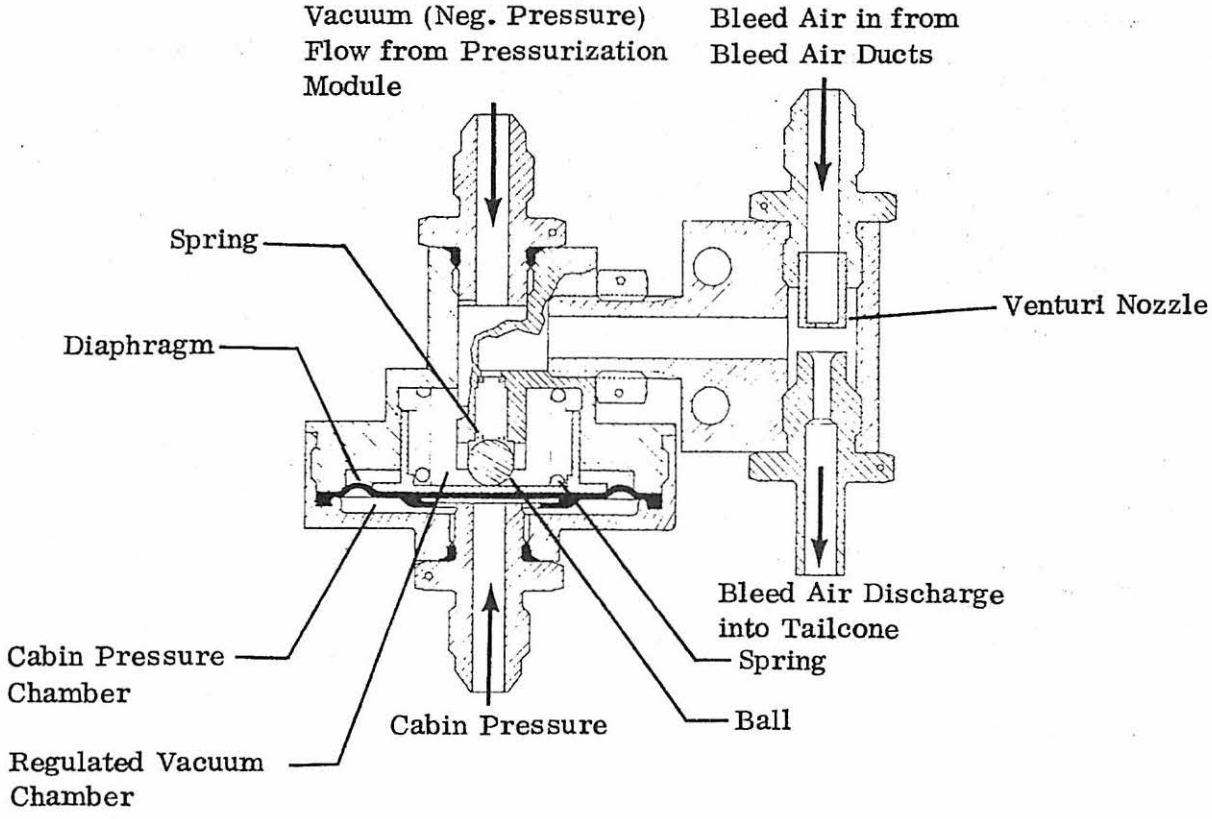
25-227 and Subsequent

Vacuum System Schematic
Figure 2

(2) On Aircraft 25-197, 25-204 and Subsequent and earlier aircraft modified per SSK 937 (Installation of Cabin Pressurization Vacuum Regulator Assembly), the vacuum regulator utilizes the venturi principle to create a vacuum for the pressurization control system. The vacuum is regulated to 4.0 (±0.75) inches of Hg below existing cabin pressure. The regulator is shown static (no bleed air thru the venturi nozzle). When bleed air passes thru the venturi nozzle, a vacuum is created in the regulated vacuum chamber. The vacuum (negative pressure) flow is from the pressurization module, thru the regulated vacuum chamber, and then overboard thru the bleed air discharge. As the vacuum reaches the regulated setting, 4.0 (±0.75) inches of Hg, the pressure in the cabin pressure chamber combined with the negative pressure in the regulated vacuum chamber overrides the spring and moves the diaphragm and ball seat to close the opening. This restricts the flow of air at negative pressure and provides a constantly regulated vacuum for the pressurization module.



25-061, 25-070 thru 25-196, 25-198 thru 25-203 Not Modified per SSK 937
(Installation of Cabin Pressurization Vacuum Regulator)



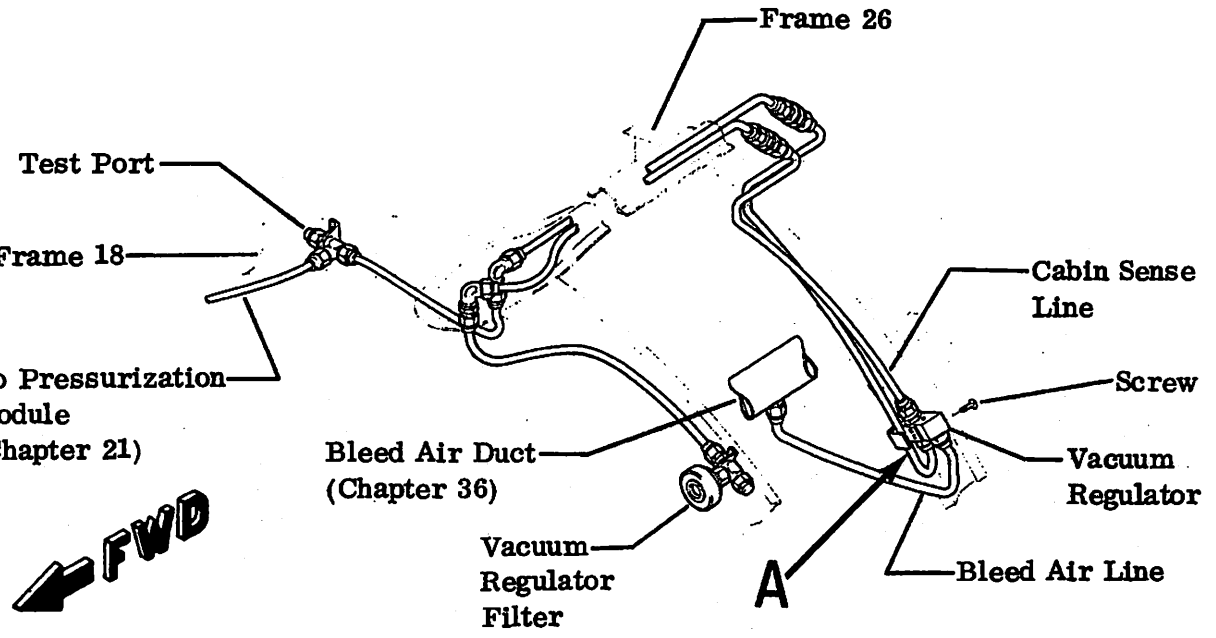
25-197, 25-204 and Subsequent and Earlier Aircraft Modified per SSK 937,
(Installation of Cabin Pressurization Vacuum Regulator)

Vacuum Regulator Schematic
Figure 3

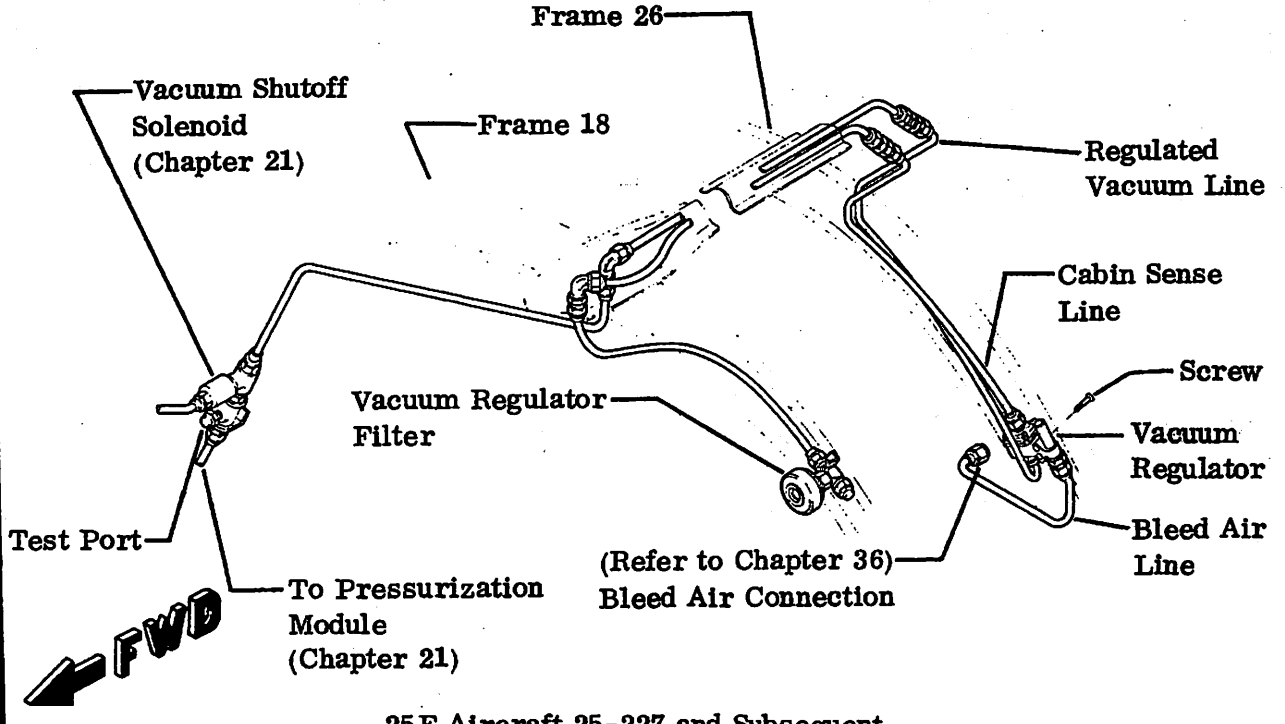
VACUUM REGULATOR - MAINTENANCE PRACTICES

1. Removal/Installation
 - A. Remove Vacuum Regulator (See figure 201)
 - (1) Lower tailcone access door.
 - (2) Disconnect bleed air, regulated pressure and cabin pressure lines from vacuum regulator. Cap all exposed openings.
 - (3) Remove attaching parts and vacuum regulator from aircraft.
 - B. Install Vacuum Regulator (See figure 201)
 - (1) Install vacuum regulator and secure with attaching parts.
 - (2) Remove caps and connect bleed air, regulated vacuum, and cabin pressure lines.
 - (3) Perform operational check of pressurization control system. (Refer to Chapter 21.)
 - (4) Secure tailcone access door.

2. Cleaning/Painting
 - A. Clean Vacuum Regulator and Filters (Aircraft 25-061, 25-070 thru 25-196, 25-198 thru 25-203 modified per SSK 937, (Installation of Cabin Pressurization Vacuum Regulator).
 - (1) Remove vacuum regulators from aircraft.
 - (2) Remove filters from vacuum regulator assembly.
 - (3) Clean filters with MEK and dry with clean, dry air.
 - (4) Clean vacuum regulator assembly with methyl alcohol and dry with clean, dry air.
 - (5) Install filters on vacuum regulator assembly.
 - (6) Install vacuum regulator assembly.



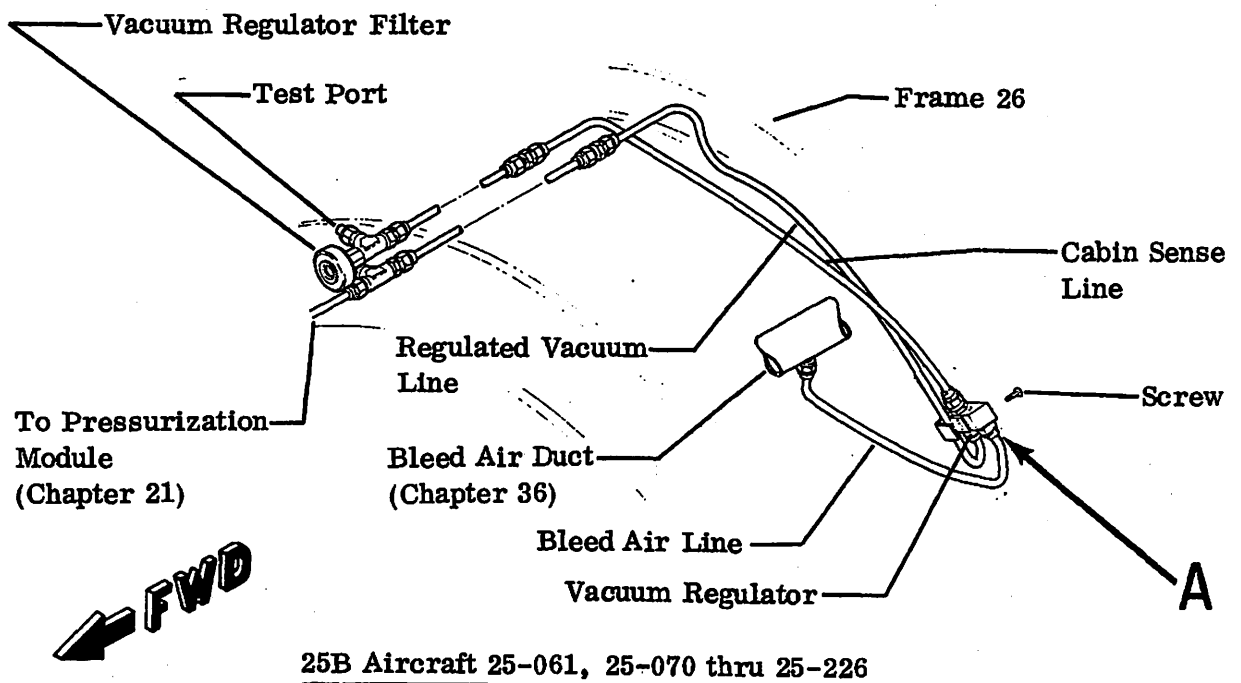
25C Aircraft 25-061, 25-070 thru 25-226



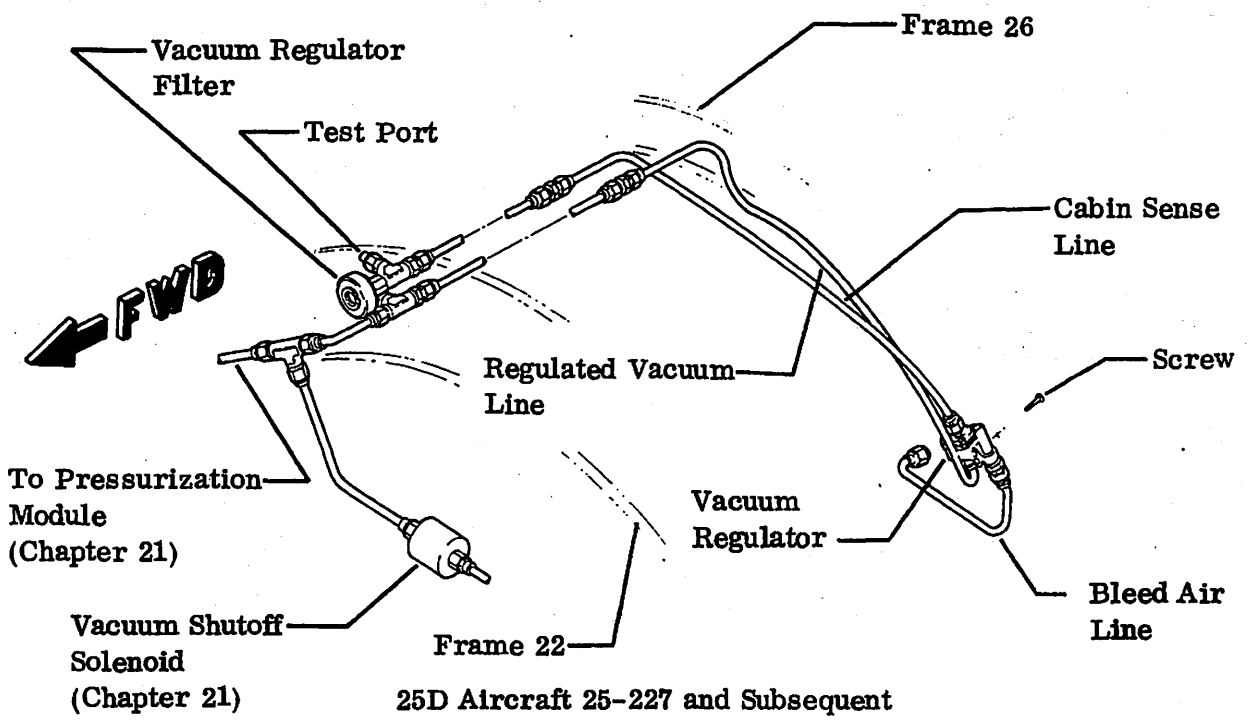
25F Aircraft 25-227 and Subsequent

Vacuum Regulator Installation
Figure 201 (Sheet 1 of 3)

13-154C



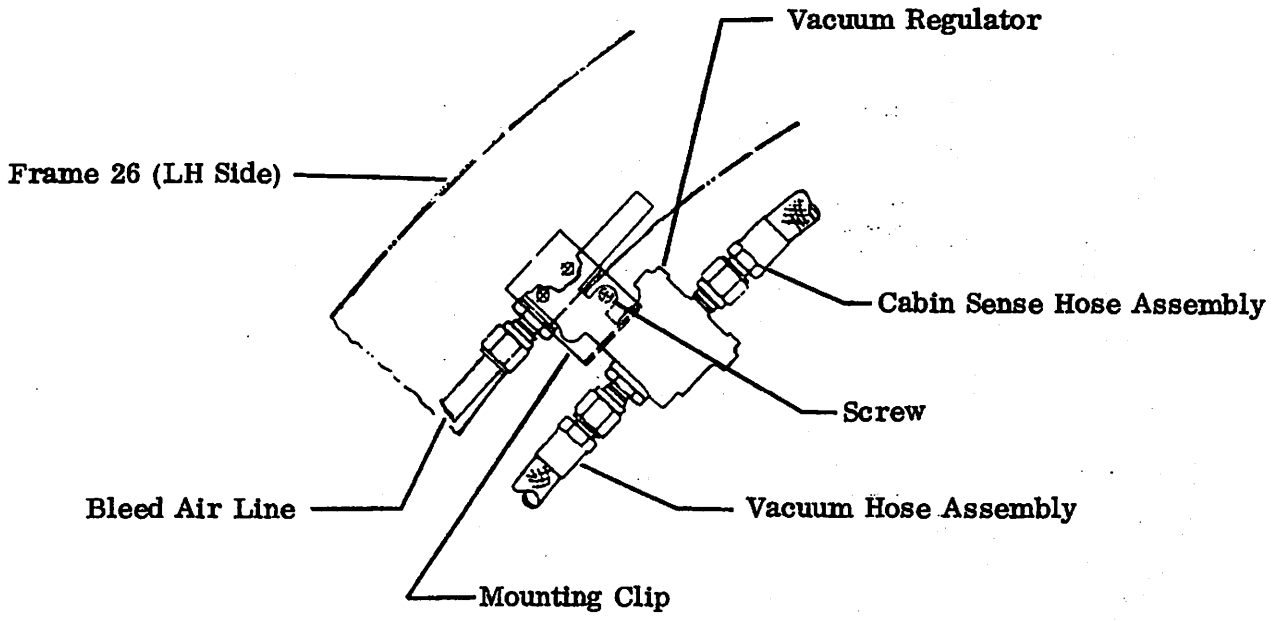
25B Aircraft 25-061, 25-070 thru 25-226



25D Aircraft 25-227 and Subsequent

Vacuum Regulator Installation
Figure 201 (Sheet 2 of 3)

13-164C



View Looking Forward at LH Aft Side of Frame 26

25B/C Aircraft 25-061, 25-070 thru 25-196 and 25-198 thru 25-203
Modified per SSK 937 (Installation of Pressurization Vacuum Regulator)

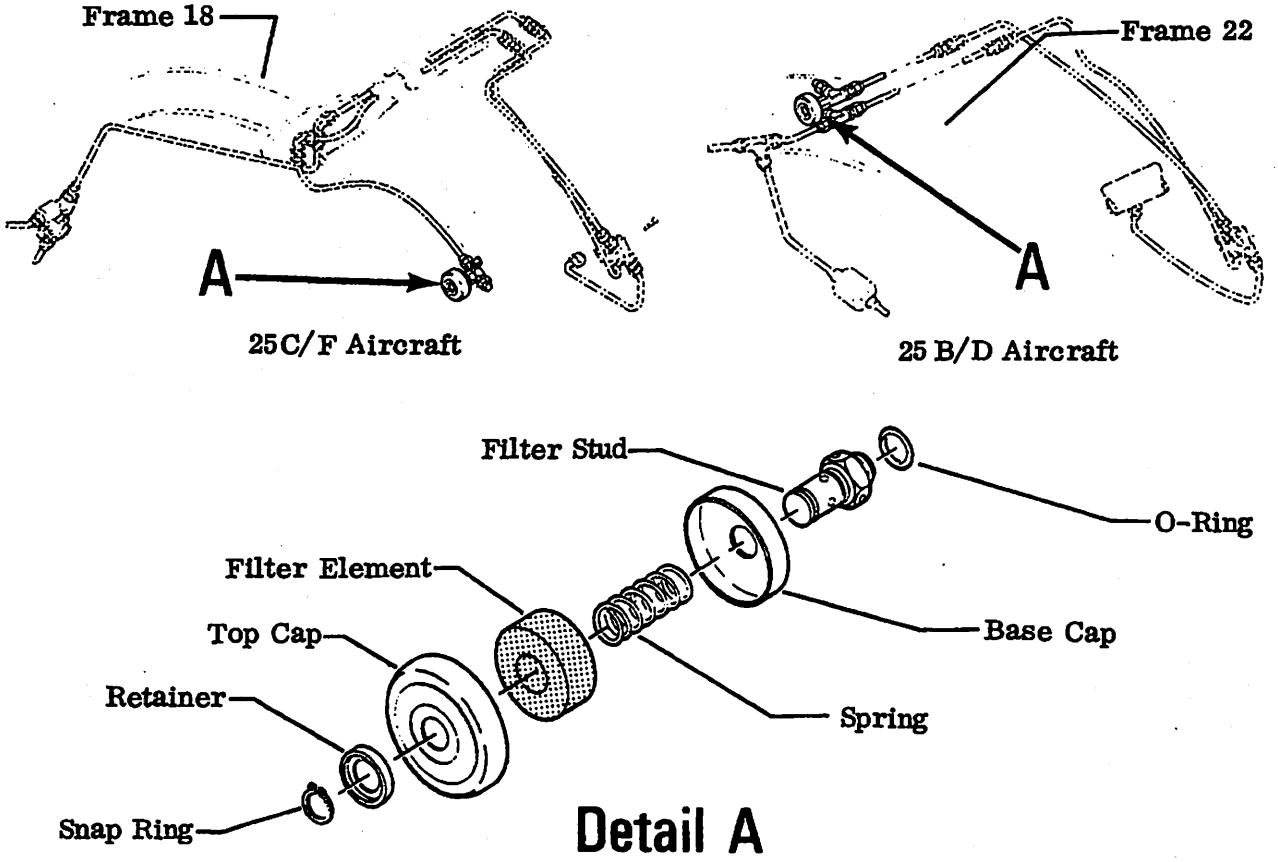
Detail A

Vacuum Regulator Installation
Figure 201 (Sheet 3 of 3)

VACUUM REGULATOR FILTER - MAINTENANCE PRACTICES

1. Removal/Installation
 - A. Disassemble Filter (See figure 201)
 - (1) Remove equipment as necessary to gain access to filter installation.
 - (2) Remove snap ring, retainer, top cap, and filter element from filter. stud.
 - (3) Clean and/or replace filter element.
 - B. Assemble Filter (See figure 201)
 - (1) Install filter element, top cap, retainer, and snap ring on filter stud.
 - (2) Install previously removed equipment.

2. Cleaning/Painting
 - A. Clean Filter Element
 - (1) Remove filter element.
 - (2) Wash element with water and a mild detergent.
 - (3) Dry filter element with compressed air.
 - (4) Install filter element.



Vacuum Regulator Filter Installation
Figure 201

13-154C
A13-64D

